63009 - Research in microorganisms in food, water and environment: traditional and molecular techniques

Información del Plan Docente

Academic Year	2017/18
Faculty / School	105 - Facultad de Veterinaria
Degree	566 - Master's in Food Quality, Safety and Technology
ECTS	3.0
Year	1
Semester	Second semester
Subject Type	Optional
Module	---

1.General information

1.1.Introduction

1.2.Recommendations to take this course

1.3.Context and importance of this course in the degree

1.4.Activities and key dates

2.Learning goals

2.1.Learning goals

2.2.Importance of learning goals

3.Aims of the course and competences

3.1.Aims of the course

3.2.Competences

4.Assessment (1st and 2nd call)

4.1.Assessment tasks (description of tasks, marking system and assessment criteria)

5.Methodology, learning tasks, syllabus and resources

5.1.Methodological overview

The methodology followed in this course is oriented towards achievement of the learning objectives. The theoretical content of this course includes the knowledge and application of reference methods and other alternative methods of analysis of food, water, and environment.

In the practice sessions, students will develop in the laboratory the different methodologies for detection and identification of pathogenic microorganisms in food; as well as different microbial groups in water and environment samples. To do this,

they will have the detailed experimental protocol stages of the process and the direct supervision of the teachers.

During the coursework presentation sessions, the student participation is encouraged, urging them to make a critical interpretation of them.

5.2.Learning tasks

The course includes the following learning tasks:

- **Lectures.** In these sessions, the reference methods for microbiological analysis of food, water and surfaces are presented; as well as the fundament and application of rapid methods of microbiological food analysis.
- **Practice session.** Students do the analysis of different matrices by rapid and alternative methods.
- **Group assignment.** Students prepare in group an assignment on topics of interest under the supervision of the teachers.
- **Seminars.** Students will present and defend their group assignments, which will be followed by a discussion.
- **Individual or group tutorials.** The teacher will be able to supervise the students' assignments and to answer any questions arising during its development.

5.3.Syllabus

The course will address the following topics:

Lectures (6 hours of one-hour sessions)

- Topic 1. Standards UNE / ISO for detection of microorganisms in food, water and environment
- Topic 2. PCR-based methods in Food Microbiology
- Topic 3. Fundamentals of Real-Time PCR

Practice sessions (20 hours of sessions lasting 2 or 4 hours each)

- Analysis of different matrices (food, water and environment) using reference methods ISO.
- Optimization of the amplification reaction DNA
- Detection and identification of foodborne pathogens through rapid analysis methods (Impedanciometry and Real-Time PCR)

Group assignment

- Different topics related to microbiological analysis methodology are proposed. The work will be developed by the recopilation and interpretation of several scientific papers and will be supervised by the teachers. It will be done in group and will be submitted on the set date.

Seminars (4 hours of sessions lasting 2 or 4 hours each)

- Students will present and will defend the group assignment, which will be followed by a discussion.

5.4.Course planning and calendar

The calendar of the lectures and practice sessions is published throughout the month of September on the website of the Faculty of Veterinary http://veterinaria.unizar.es/

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5.5.Bibliography and recommended resources

The literature of the academic year is kept updated and is consulted on the Library website (biblioteca.unizar.es / recommended bibliography).